

**W. R. CHURCH**  
**Computer Center**  
**NEWSLETTER**

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OS/MVT WORKLOAD - FEBRUARY 1973

	<u>January</u>	<u>February</u>
Total Number of OS Jobs	21,673	26,268
QUICKRUN: Number of Jobs	9,178	12,230
% all Jobs	42.3%	46.6%
% of total CPU Time	1.4%	2.4%

1) Utilization by Programming Languages

All Jobs Including QUICKRUN (% of total jobs, % of total CPU time):

FORTRAN G (36.1, 53.3), WATFORG (16.3, 0.2), XPL (6.1, 0.4), ALGOLX (5.8, 0.3), GPSS (3.5, 14.1), FORTRAN H (0.9, 9.6), ALGOLW (3.4, 0.1), BASIC (1.8, 0.1), PL/I (1.0, 0.7)

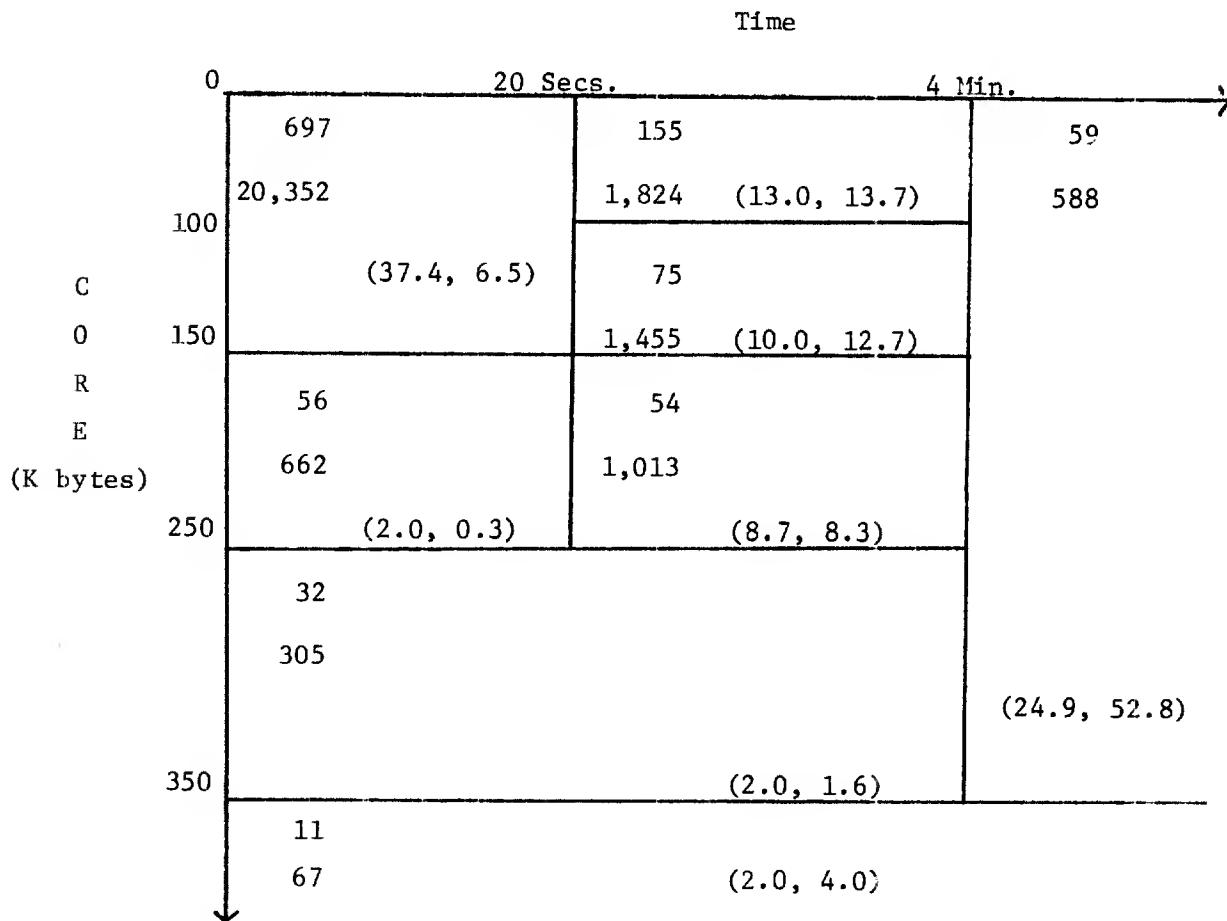
QUICKRUN JOBS (% of Jobs, % of QUICKRUN CPU Time):

WATFORG (34.6%, 6.7%), FORTRAN G (27.4, 54.3), XPL (13.1, 16.3), ALGOLX (12.4, 10.8), BASIC (3.8, 5.8), GPSS (0.5, 2.0)

2) Some Utilization Statistics By Core Size/Run Time Categories

The following entries are included in and apply to each cell:

Number of Different Users
Number of Jobs
(% of total core time, % of total CPU time)



3) Breakdown by Job Class (% of Total Jobs)

QUICKRUN (46.6%), A (8.2%), B (8.9%), C (3.4%), D (6.5%), E (7.1%), F (1.3%), G (6.9%), H (2.3%), I (1.6%), J (1.6%), K (1.1%), L (2.3%), M (2.0%)

4) Turn Around of All Classes (% of Total Jobs Returned Within Indicated Time)

5 Mins.	60%
15 Mins.	75.8%
1 Hr.	90.2%

OS/360 RELEASE 21.6 SCHEDULED FOR SUMMER RECESS

Implementation of Release 21.6 of OS/360 is currently scheduled for the week of June 25 - 29, 1973. This week falls in the break between Quarters IV and I and has been chosen to minimize possible impact on class work or scheduled research computing.

No changes will be made during Quarter IV; the present version will continue as the production system. Release 21 will be the last official IBM version of OS/360.

Each new release of an operating system offers operational improvements, corrections to many known errors, functional enhancements, new capability, etc. Desirable as these improvements may be they are weighed against the possible disruptive effect, albeit temporary, on some users. Sometimes we have skipped releases because the benefits have been marginal at NPS. Of course, IBM's software maintenance policy also adds pressure to keep "up-to-date". They generally continue to provide maintenance support for the (n-1)th release for 6 months after the date of the announcement of the n-th release.

Our review of the Release 21.6 system suggests very few, if any, user programs should be affected. However, we are delaying its implementation until the summer break and are offering users the opportunity to pre-test their jobs long before the Release 21 introduction. If you want to assure yourself that your program(s) will run with no problems under 21.6, please contact Mr. Edward Ward (In-132, Ext. 2796).

CP/CMS TIME-SHARING NOTES

1) PL/I and SCRIPT Not Available

PL/I is no longer supported under CMS. Use of PL/I has been found to seriously affect the response time of the CP/CMS system degrading service to all terminal users. SCRIPT, which has not been officially supported at NPS since January 1971 has also been withdrawn from the system.

2) FORTRAN Subroutine Name Trap

Under CMS, main FORTRAN programs and subroutines can be combined in one source file and this file used as input to the FORTRAN compiler. Alternatively, the subroutines can be entered as distinct files and compiled separately. The object program is identical to that produced under OS except for the entry point of the first main program. The entry point of this main program is the name of the source file. If the name of a source file is the same as the name of a subroutine included in the source file, a subroutine call generates a catastrophic branch to the beginning of the main program and the subroutine can never be executed.

In summary, don't make subroutine names do double duty as file names.

3) PL360 is Available

The PL360 programming language is available for use under the CMS time sharing system. PL360 includes many facilities of symbolic assembly languages but has an ALGOL-like syntax.

The command format is:

PL360 filename (option 1 ... option n)

Options:

PRINT        prints the listing file on the offline printer and deletes it;

NODECK      suppresses the TEXT file;

NOLIST      suppresses the listing file.

The manual, "PL360, A Programming Language for the IBM 360" by Michael A. Malcolm is available in the Computer Center Library, In-162.

This CP/CMS note corrects an erroneous item in the last Newsletter.

FORTRAN H CAN HELP SPEED UP LARGE PROGRAMS

We are told that many users with large problems have never heard of the FORTRAN H compiler which is available under OS/MVT. To quote from Section 5.1.1 of the User's Manual: "FORTRAN H (is) an IBM processor which produces highly optimized code which may be desirable for special production programs, such as large thesis projects." The cataloged procedures for using FORTRAN H are summarized on page 5-9 of the Manual. In general, use of FORTRAN H instead of G will increase compiling time but decrease execution time. Some specimen runs have shown a 3-5 times improvement in execution time over FORTRAN G. Other questions about FORTRAN H can be answered by the Programming Consultant, In-146.

#### STATISTICAL SERVICES

In the last Newsletter we announced the availability of TN 0211-22, Statistical Resources of the W. R. Church Computer Center by G. P. Learmonth. This publication describes the pre-compiled programs available to users in the library, STATLIB. Other Technical Notes that should be helpful to users with statistical problems are TN 0211-19, Directions for Using SPSS (Statistical Package for the Social Sciences) and TN 0211-20, SNAP/IEDA Computing Package User's Manual. Copies of these notes are available in In-147. We would like our users to help themselves whenever possible by reading the documentation provided before asking for individual help.

Additionally, professors who plan to use statistical routines in their classes during Quarter IV are encouraged to contact Mr. Learmonth (In-102, X2672). He is ready, willing and able to describe the available routines to any class and to give directions for using them. A short talk of this kind given to a whole class could save us many hours of repetitious consulting time with individual students.

#### FORMAC TECHNICAL NOTE - LEAVE THE ALGEBRA TO THE 360

FORMAC (FORmula Manipulation Computer) is a package providing a tool for performing symbolic manipulation of mathematical expressions. FORTRAN-FORMAC, which has recently been installed at NPS, is a superset of FORTRAN and provides the usual features of that language as well as the abilities of FORMAC to differentiate, evaluate, group expressions, etc. Technical Note 0211-23, User's Guide for FORTRAN-FORMAC at NPS by Sharon Raney is available (in In-147) to assist potential users. A new cataloged procedure for fast turnaround of FORTRAN-FORMAC jobs is described in Section 7.5.6 of the User's Manual (Update 20).

#### REVISION OF TECHNICAL NOTE ON TAPE CONVERSION

A new edition of TN 0211-08, Procedures for Converting 7-Track Magnetic Tapes to 9-track Magnetic Tape has recently been issued. This note by Sharon D. Raney is useful primarily to users who want to work with 7-track tapes from outside sources (such as Fleet Numerical Weather Central the EE Computer Lab) on the System 360. However, it also contains much useful information for all users of magnetic tapes at the Center. Copies are available at the Information Services Office, In-147.

#### INFORMATION SERVICES NOTES

A Suggestion Box/Graffiti Board is located near the Dispatch Counter in In-140. Suggestions, complaints, words of praise, or requests for information may be submitted by any user. Replies will be posted on the bulletin (alias "graffiti") board.

### Accounting Data

The user identification number issued when a user first registers with the Computer Center is valid for as long as he is assigned to the School. If a change takes place in a user's status, i.e., going from student to staff, or there is a change in his organization, mailing or section code, the Information Services Office (In-147) should be notified as soon as possible.

### Project Numbers

With the close of Quarter III, on 23 March, class project numbers 1400 through 1458 became invalid. New numbers will be issued by the Information Services Office (In-147, X2731) for Quarter IV classes. Current individual project numbers are valid until 30 June 73.

### User's Manual Update

All registered holders of the User's Manual should have received Update Package #20 by the time this Newsletter appears. This update corrects the listing of remote terminal locations, revises information on dumping a tape to the printer, adds a new FORMAC procedure, contains a rewrite on TAPEOUT, etc. If you have not received your copy, please come to In-147.

### SUBROUTINE LIBRARY CHANGES

Since the last issue of the Newsletter, the following programs have been added to the Source Library:

C3 CDLGAM Complex Gamma Function with Error Control (COMPLEX\*16)  
Q0 NEWDEK Translates BCD (026 Punch) to EBCDIC (029 Punch)

The following routines have been revised in the Source Library and in any other library in which they appear:

Q0 CCHECK Check Data Card Deck for Format Errors  
F2 DALMAT Eigenvalues and Vectors of Arbitrary Complex Matrix (REAL\*8)  
Q0 LISTER General Card Lister  
Q0 SEQNCE (Re)Sequence One or More Decks

### RECENT ADDITIONS TO COMPUTER CENTER LIBRARY (In-162)

#### Books

<u>Author</u>	<u>Title</u>
Selfridge	Primer for FORTRAN IV On-Line
Jacoby	Iterative Methods for Nonlinear Optimization Problems

Books (Continued)

<u>Author</u>	<u>Title</u>
Albrecht	Basic
Griswold	Macro Implementation of Snobol4
Bajpai	FORTRAN and ALGOL
Lootsma	Numerical Methods for Non-linear Optimization
Peck	ALGOL 68 Implementation
Gruenberger	Information Systems for Management
Walker	User/computer Interface
Freiberger	Statistical Computer Performance Evaluation
Winograd	Understanding Natural Language
Miller	Complexity of Computer Computations
Webster	Data Communications and Business Systems

Proceedings

<u>Author</u>	<u>Title</u>
Minker	Information Storage and Retrieval
U. S. Army	Operations Research Symposium - 'Risk Analysis'
B. C. S.	Steps to Practicality
ACM	Measurement and Evaluation - SIGME
AFIPS	Fall Joint Computer Conference, Vol. 41, Pts. I, II
AFIPS	Spring Joint Computer Conference, Vol. 40
System Develop. Corp.	Multi-access Computing in the 70's: Overview . . .
ACM	Twenty Fifth Annual Conference - Vol. I, II
IFIPS	Information Processing 71: Vols. I, II
ACM	Two-dimensional Man-machine Communication
University of Colorado	Second Annual Seminar for Directors of Academic Centers
EDUCOM	Information Networks
Rustin, Ed.	Debugging Techniques in Large Systems - 1970
SIAM	Studies in Numerical Analysis 1 - (Miscellaneous)
SIAM	Studies in Numerical Analysis 2 - (Nonlinear Problems)
SIAM	Studies in Applied Mathematics 3 - (Applied Probability)
SIAM	Studies in Approximation and Analysis
Kaneff, Ed.	Picture Language Machines, Canberra, Australia - 1969
CPEUG	Papers Presented - 5th Meeting

Defense Documentation Center (DDC)

<u>AD Number</u>	<u>Title</u>	<u>Author</u>
748 301	Computer-Assisted Planning	System Develop Corp.
751 253	Computable Error Bounds for Inner Product Evaluation	Aerospace Research Lab

Defense Documentation Center (DDC) (Continued)

<u>AD Number</u>	<u>Title</u>	<u>Author</u>
751 254	A Posteriori Analysis of Crout Method in Aerospace Research	
	Solving Linear Algebraic Systems	Lab
751 614	Analysis of Sorting Networks	Burton J. Smith
748 017	Generating Routines of Data Description Language Processor	Gross
746 694	Statistical Models for Control and Optimization Techniques	Box, et. al
750 181	Contour Routine with Auto-Interpolation	Wirth
749 871	Discrete Fourier Transform for 360/67 Computing System	Vote
746 700	Edge Detection Using Heuristic Search Methods	Martelli
749 985	Research in Computer-Assisted Documentation of Navy Computer Programs	Berkeley
749 683	Accuracy Improvement of the Digital Computer Function Routine	Kahng
748 987	User's Manual for Glyplit-Program to Translate ILLIAC IV Glypnir-360 P/1	
748 947	The Law of Averages as a Computing Tool	Delbrouck
750 672	An Analysis of Drum Storage Units	Fuller & Baskett
746 495	Optimal Space Allocation on Disk Storage Devices	Morgan
745 958	Comparison of Several Gradient Algorithms	Miele, Tietze, et. al
747 277	Computational Algorithms for Unconstrained Minimization	Kujawaki
746 045	Partial Differential Equations by Arbitrary Grid Finite Difference Technique	Jensen
739 738	Simulation of AACD Simplex and Multi-processor Operation	Smith
746 680	Associative Processing Applied to Pattern Recognition	VanBlerkom, et. al
747 544	Optimal Scheduling Strategies in a Multiprocessor System	Ramamoorthy, et. al
736 153	High Speed Digital Fourier Analyzer	Chwastyk
736 987	MIS Technology: A View of the Future	Kriebel

Distribution

List 4  
 Less F, F2  
 800 for Students (SMC Lobby)  
 2 copies to B-3  
 200 copies to B-2